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XXII.—*On the Probability of a Bone Age.* By GILBERT MALCOLM SPROAT.

[*Read July 9th, 1867.*]

I SHOULD not be surprised if a "bone" sub-division of the older stone age were found necessary to describe a somewhat earlier period than the real stone age—a period characterised by the general use of bones and shells by men over an extensive portion of the surface of the earth. It is not improbable that a "bone using" people once lived on the coast of Great Britain and on the north-western shores of the continent of Europe. The perishable nature of bone, its lightness, and the encroachment of the sea on places where the supposed people may have lived, may account for the absence of many important bone instruments in the "finds" that are now made. Though probably there never was a time in which either bone, or stone, or iron, was universally and exclusively used, yet, I think, a "bone age," in some parts of the world, and perhaps over a great part of it, must naturally have preceded an age of stone. Savages can get bones everywhere—bones, too, of diverse sizes and shapes facilitating their manufacture—but they cannot obtain flint or obsidian in all places. A good sized fowl or fish, before the horns of animals could be procured, would supply the savage with a number of fish-hooks, gimlets, arrow-heads, and other instruments. As long as he could get bones, and they answered his purposes, he would not be likely to use instruments of stone. I wrote an account, in the *Transactions* of the Ethnological Society for 1866, of the ant tribes on the west coast of Vancouver Island. From a careful observation of the arts among these savages, I am tolerably certain that no other materials than bone and shell were required by them for making their tools and weapons down to the time when iron was brought amongst them—say within the last one hundred and fifty years. They used bone and shell tools, and bone fishing and hunting instruments, long after they had a knowledge of iron—as lately indeed as a few years ago—and at the present time the mussel-shell adze used in canoe-making is preferred, even by the young men, to one of any other material, and to the best English and American chisels. So in felling large cedar trees, and in other heavy work, until I took among the people the admirable woodman's axe used in America, they found their bone chisels more useful than any small handled instrument of stone or iron, as

the bone tool had the requisite toughness, bluntness, and penetrating power for such work, and indeed generally for working cedar wood for their special purposes. These savages had a few stone and copper instruments—the latter not smelted or moulded—eighty or ninety years ago, when first visited by Cook, and probably earlier; still, the bone instruments have not even yet been superseded. Ground stone chisels are found among them at this day, but the Indians never describe the utility of these chisels, and produce old bone instruments for every purpose; on being asked what they used before they had English iron or steel tools, I do not think the Ahts either manufactured or used these stone instruments. Those found among them by Cook and other travellers were probably obtained by the Ahts in trade, or as curiosities from the Indians inhabiting the coast of the mainland farther north, who originally or anciently themselves perhaps a “bone-using” people, had been forced by the comparative scarcity of cedar in their district to make stone instruments for cutting harder trees. These Northern Indians are very skilful in working stone; their stone weapons and instruments are as well shaped and polished as the best specimens of the supposed highest stone age; yet they are fiercer and more uncivilised than even the Vancouver Ahts, though these latter, being destitute of stone, bronze, or iron, would be ranked lower by the prehistoric archæologists. What then is the value of the quality of stone instruments as a test of the condition of a savage people?

In elucidation of the subject of this paper, I will here make a few remarks on the kind of weapons and tools that were probably first used by savage men.

On the sea-shore, to which migrators entering a new country first come, and where, from the convenience of procuring shell-fish and river-fish, they would probably remain, many useful pieces of bone could easily be got, and it is not a certainty that stones could be procured suitable for the manufacture of weapons. The history, probably, was something as follows:—The savage man would seek his food first among the shell-fish on the beach. Shell-fish generally are good to eat, and require little cooking; and not being able to move quickly, they would be an easy prey to the hungry captor.

Soon he would observe larger and more tempting fish, unencumbered with shells, in the shallow rivers and near the shore of the sea; and an early exercise of his ingenuity would be an attempt to make a weapon for their capture. He would probably first throw a round stone at the fish; then, perceiving that a stone would not go through the water to kill them, the notion of a thin stick for thrusting would occur to him. To get

a sharp hard point to this stick the savage would scrape the end of it with a shell, and burn the point in the fire, and finally would employ for this purpose a piece of fish-bone after having captured a fish. Bone, in all parts of the world, would be available for his purpose; stone of the proper description, might be, or it might not.

As in attacking animals or birds, or in war with his fellow-man, the same weapon would be used by the savage, we may suppose that the lance is a very old and common weapon. It is the original of the modern bayonet—a weapon which calls into action the same thrusting principle in the use of offensive weapons as the sharp stick of the savage. The arrow, which would be the next weapon of the savage, is simply a small lance projected by a contrivance called the bow in aid of the arm of the hunter, to whom the idea of the bow would occur, after trying unsuccessfully to kill wary animals and birds, by throwing a pointed stick at them from a distance. It is not, however, easy to form any reasonable conjecture as to what could have so generally suggested to all races of rude men the particular form of the bow as a means of increasing the natural force of the arm.

So much for the first weapons of men *living on the coast*. As regards *tribes living inland*, without opportunities of fishing, the process of the invention of their early weapons probably was generally similar, though perhaps with some difference in the early stages. The inland man probably first tried to kill animals and birds by throwing stones at them rather than by transfixing them with a pointed stick after the manner of the coast man, to whom the possibility of approaching close to fish—say from a fallen tree across a stream or from the bank,—and also the need of a weapon to penetrate the water, would, according to my notion, have almost immediately suggested the use of a lance. As the use of the arrow would soon follow the invention of the lance, the probability is that the bow was first made by savages living on the coast. The inland man, on the other hand, throwing stones at animals in order to kill them, probably first invented the sling as an assister of the throwing power of the arm. Afterwards, by observing horned animals butting, or on some suggestion, he would get the idea of a spear or lance, and in the same manner as the coast man, but at a later time would follow up the discovery of the lance by that of the arrow and bow. The inland man, therefore, except as regards the sling, would almost from the first, as well as the coast man, and for the same reasons, find it convenient to use bones for pointing his common weapons.

This rule, however, of the use of bone for weapons in the

early stages of human history would be subject to modification in countries where flint, obsidian, or some other suitable stone, was so plentiful as to come into competition with bone, or where circumstances had compelled the people to practise stone working.

I would remark here that the offensive *weapons* of prehistoric savage tribes, considered *per se*, indicate only part of their history and condition ; a larger part of the life of a prehistoric people may be learned from the description of their *tools*. As in the case of weapons, these tools, over a large part of the world, originally may have been made of bone—an universally and easily obtainable material. Between the history of the weapons and of the tools of savages, however, there is this difference—that the materials used for the tools would not depend simply on the presence in the district of bone, stone, copper, or iron, for the desired instrument, but it would be decided in the case of the tools by the description of the wood, or other substance required by the people for essential purposes, such as making houses, sledges, canoes, and utensils, in constructing which the tools would be used.

On the other hand, a simple quality determines the material for weapons ; the power of penetrating is almost the only quality required anywhere by the fisherman, hunter, or warrior in a weapon for destroying life, whether of fish, bird, animal, or man. The Galloway man's leister in the Solway kills a salmon in the same manner as the *milsyeh* or spear of the Aht in Nitinaht Sound ; and whether a deer falls by a bullet on Braemar, or by an arrow at Klah-oh-quaht, it is the piercing power of the weapon which serves its purpose in letting out the life. The missile may be a piece of bone, flint or metal—a lance-head, an arrow-head, or a bullet ; it may be flung from the hand, or propelled by a bow, or by the explosion of gunpowder—the quality of penetrating the body it reaches, when so propelled, is what is wanted. But no single quality of this sort suffices for tools ; cutting is, perhaps, the general quality most wanted, but there must be the power of cutting in many different ways—by axe, chisel, adze, gimlet, or gouge, in order to manufacture even the commonest requirement of a savage. Hence the greater importance of studying the evidence of *tools* than *weapons* in estimating the condition of an extinct savage race. It evidently must make a considerable difference in the kind of tools used by savages, whether the house is built of wood, stone, or mud ; the canoe made of bark, or of a single tree, or joined planks ; whether the potter's art is known ; and whether hard oak, tough fir, or brittle cedar is available for the many purposes to which wood is applied. The Scottish savage

of the old time, probably used the same description of fishing and hunting weapons as the modern Aht, but circumstances might have caused his industrial instruments to be widely different; and those circumstances may have greatly affected his condition.

As already stated, the savage tribes I have referred to, viz., the Ahts in Vancouver Island, have hitherto used almost entirely bone instruments, with a few knives and gouges of mussel, oyster, and clam shells. If with these they can fashion all their necessary offensive weapons, cut down trees, and make canoes and house planks, for what reason should they ever abandon their bone instruments, and laboriously endeavour to form them of a more difficult material—stone? They would do so only under pressure of some necessity, such as a necessity for weightier and sharper instruments. How would this occasion be likely to arise? The range of my personal observation is limited, and I can speak only of these Aht savages above-named, who are known to me. I can see how they would change from a “bone-using” into a “stone-using” people—in fact, I may say that the transitional time among the Ahts approaches. Wood is one of the chief necessities to every community of men, and particularly to savages (though the Esquimaux do without it); and it is worthy of observation how greatly the whole life and condition of a savage nation may depend on the abundance and description of the surrounding flora.

To us the pine is, perhaps, the most universally useful tree, furnishing, as it does, tar, turpentine, resin, lampblack, and many other products, and wood for all sorts of buildings. What the pine is to us, and far more than what the pine is, is the cedar tree, *Thuja gigantea*, to the Ahts. Their condition is closely connected with the presence of cedar trees in the district. Next to the absence of their staple food, the salmon—they would miss most the cedar tree. They produce fire from cedar sticks; they make clothes, houses, canoes, utensils, ropes, fishing traps, and weapons, of this invaluable wood. It is light and easily worked, and owing to the straightness of its fibres, splits readily into boards or poles. Possessing the cedar tree, the bone and shell tools of the Ahts are sufficient for every purpose; but if the cedar trees failed, the whole nation would come to a standstill. The cedars in the Aht district grow scattered through the pine forests, and, according to the statements of the Indians themselves, pine cedar trees for canoes are becoming scarce. They will last, I dare say, for several generations; still, if they should happen at any time to fail, it is evident that the people, not being able to fell nor fashion the tough gigantic fir trees with their light bone instruments, would either have to migrate or

to seek for their tools a harder material in metal or stone. Thus the "bone-using" Ahts, in a century or two, on the exhaustion of the cedar tree, would have to "move on," or become a "stone-using" people. Their houses would be changed, for they could not with bone instruments make the fir tree into broad planks like the cedar; the beautiful canoes would no longer be seen, and shapeless "dug-outs", dangerous to the fisherman, would take their place; in short, the habits of the people probably would be so greatly changed that in the end they might retire inland from the sea shore and become hunters. In pursuing game over the country, these hunters would be more likely than fishermen to find metals; and thus a step in advance might result from the discovery of that civilising material. But if, on the exhaustion of the cedar tree, the savages had no knowledge of a new district to which they could go, and if the interior of their own country were unsuitable for settlement, they would probably remain at their old villages by the seaside, abandon their bone instruments, and hew at the fir trees with the best stone ones they could make. Such might be expected to be the history and condition of the Ahts, two centuries hence, if left to themselves; and such, probably, was the state of the Danish fishermen, whose existence is revealed in the shell-mounds. The people in these old villages once possessed bone instruments, and afterwards, for some reason such as a change of trees, used weapons and tools made of stone; and the transition from the "bone" to the "stone" age may have been so violent as to cause after a time the migration of the inhabitants, in search of a more suitable country; or possibly, their decline and extinction without moving from the places where their remains are now found. I repeat, that the measure of such a prehistoric people's physical comfort and condition would not be the sort of weapons they used—whether bone, flint, or bronze—but more specially the description of the wood that was available for their general wants. A bone-using native on the west of Vancouver Island, with plenty of cedar, is better off than if he had a certain knowledge of iron, but was obliged to use oak or fir. And on this "bone age" hypothesis, why might not men who lived even before the unground-stone age, have been in some parts of the world, with suitable flora, in a less rude state than is generally supposed, in a condition, in fact, as good as the Ahts? How strange if it shall appear that men in that old time, instead of living on a par with the beasts, enjoyed a physical condition superior to that of masses of people in modern civilised countries, and had their slaves, their degrees of social rank, their formal etiquette, their ceremonial feasts, and such moral and religious

characteristics as distinguish the now-existing savage tribes in Vancouver Island to whom I have alluded !

In conclusion, I will add that we may, perhaps, contemplate in the succession of the vegetable kingdom the means used by God for necessitating or encouraging the early migrations of the men who spread first over the world. The notion of seeking a more suitable country would not enter the mind of a savage ; he would not move less forced by some imperious necessity. It is pretty well proved that, before the savage will exert his body or mind sustainedly in any direction, there must be a strong pressure from without—not the sort of pressure which kindly human efforts—as of us his more civilised fellow-men—would put upon him, but the gradual, silent, irresistible force of nature, changing completely his external circumstances, and impelling him along the difficult road to civilisation by the alternative of progress or extinction.
